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ROOT AND PETIOLE ROT OF SPATHIPHYLLUM CAUSED BY CYLINDROCLADIUM SPATHIPHYLLI

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A root and petiole rot of spathiphyllum species has wreaked considerable havoc on the commercial production of this plant in Florida since its discovery in December 1978 (2,3,4). Until October 1982, the fungus that caused this disease had been designated as Cylindrocladium floridanum Sobers and Seymour (2,3,4) but has since been found to be a new species and was named C. spathiphylli Schoulties, El-Gholl, and Alfieri (5).

SYMPTOMS. Wilting and yellowing of the oldest foliage are the first obvious aboveground symptoms of the root disease. By the time these symptoms appear, 30-40% of the roots may be decayed (Fig 1A). Frequently, when root necrosis is severe, the lower petioles exhibit irregularly shaped, slightly sunken, blackish lesions of various sizes (Fig. 1B). Leaf spots, which are uncommon under natural conditions, vary from brown to black, irregularly shaped spots surrounded by yellow halos.

DISEASE DEVELOPMENT AND SPREAD. Cylindrocladium spathiphylli is most active as a pathogen when conditions are warm, wet, and humid. Unfortunately, these are the very conditions in which spathiphyllums grow best. The fungus is relatively passive in its spread. Although aerial spread is possible, the conidia of the fungus are firmly held together when attached to the conidiophores and are dislodged and separated primarily in water. Splashing of irrigation water scatters conidia, and water run-off from infected plants carrying conidia moves along the soil surface and contaminates plants being grown on the ground. However, it is man who unwittingly carries infested soil and infected plants to new areas in the nursery and to other nurseries. The disease may progress without much notice until it is distributed throughout the nursery.

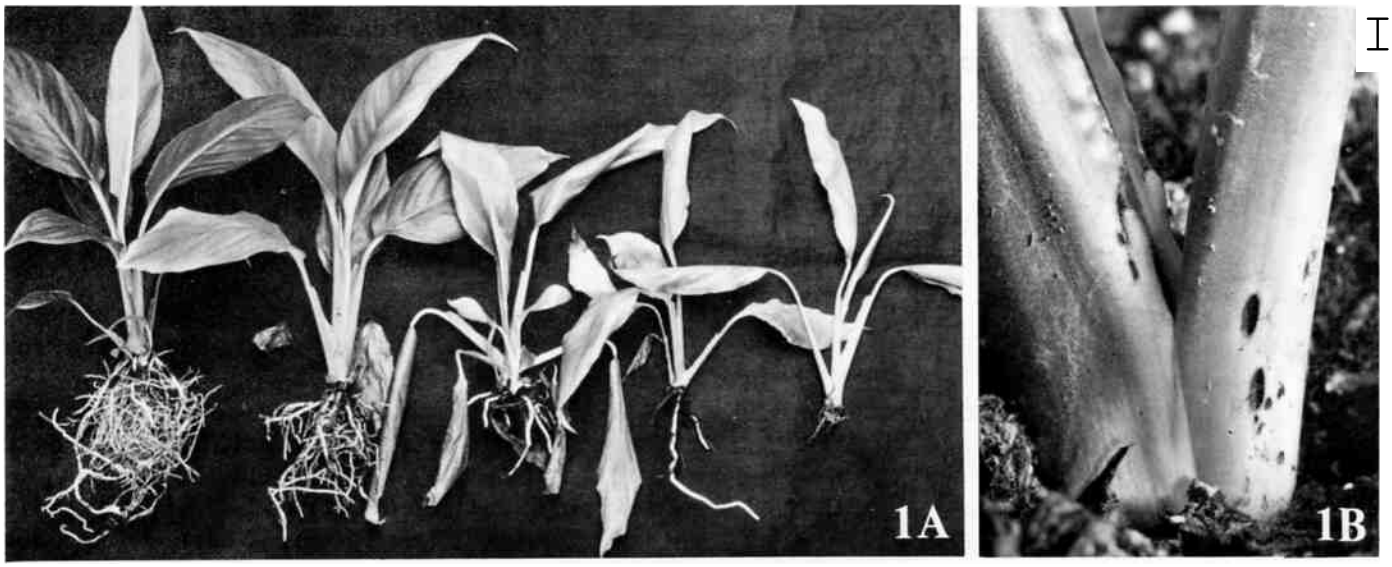

Fig. 1. A) Progressive root deterioration and discoloration of foliage and B) petiole lesions caused by Cylindrocladium spathiphylli on spathiphyllum. (DPI Photo #702004-4}

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HOST RANGE. Spathiphyllum is the only known host under natural conditions. Under artificial conditions, we have shown that other aroids may become infected, but seem to tolerate the pathogen.

CONTROL. Control of the Cylindrocladium disease on spathiphyllum has proved to be difficult for at least three reasons. (i) As far as it is known, all commercially grown varieties and species of spathiphyllum of all ages are susceptible to infection. Only S. floribundum seems to tolerate infection. (ii) In the final analysis, chemical treatment is ineffective. Of 16 chemicals tested, only benomyl offered limited control (1). Benomyl at 1/4 to 1/2 lb per 100 gal of water (114-227 g per 380 liters) on a weekly basis reduced disease severity, but, once infected, plants did not recover. The pathogen flourished, and the disease progressed when the fungicide drench was discontinued (1). (iii) As discussed previously, the disease is often well established, and the pathogen is spread before the disease is noticed in the nursery.

If you are a spathiphyllum grower and do not have this disease on your plants, you should not allow the pathogen to enter your spathiphyllum stock, propagation, or production areas. Tissue-cultured spathiphyllums are available and should be free of C. spathiphylli in the so-called phase III stage (i.e., last stage of tissue culturing before transplanting to potting mix). Seed-cultured spathiphyllums derived from healthy stock plants may be free of C. spathiphylli, but if the nursery that produced the liners has C. spathiphylli on its premises, there is a risk of introducing the pathogen into your nursery. Once pathogen-free plants are introduced, use new and pathogen-free soil mixes, use new or sanitized containers, grow the plants on raised benches or well drained surfaces (e.g., rocks), and employ good sanitation practices in the nursery.

If you know that you have the Cylindrocladium disease, it would probably be in your best interest to begin growing disease-free spathiphyllum in an area of your operation that is free of C. spathiphylli. Be certain that you introduce only pathogen-free plants into the new location and take precautions against moving infested soils and tools from the abandoned area into the new spathiphyllum-growing area.

SURVEY AND DETECTION. Because root necrosis can be extensive and the foliage may appear healthy, it is necessary to examine and confirm the presence of C. spathiphylli with the submission of appropriate specimens to a plant disease laboratory. Growers may be unaware of the disease and unknowingly move infected plants with infested soils to other nurseries. As the root disease progresses, the oldest foliage turns chlorotic and then necrotic. With advanced root infection, plants can be easily lifted from the soil. Irregularly shaped lesions on the petioles near the soil line may be present on severely infected spathiphyllums.

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